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EXAMINER
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WALDBAUM, SAMUEL A

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* GEORG CURTIUS  
and PETER SCHWEIER

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Appeal 2009-015339  
Application 10/583,636  
Technology Center 1700

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Before ADRIENE LEPIANE HANLON, BEVERLY A. FRANKLIN, and  
KAREN M. HASTINGS, *Administrative Patent Judges*.

HANLON, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

This is a decision on appeal under 35 U.S.C. § 134 from an Examiner's final rejection of claims 11-20 which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

The subject matter on appeal is directed to a dishwasher comprising a system for recognizing the rinsing fluid level in the dishwasher. Claim 11, reproduced below, is illustrative.

11. A dishwasher comprising:

at least one washing container for receiving items to be handled, with the items to be handled being subjected to an operative handling cycle including at least one of a washing step, a rinsing step and a drying step wherein the washing step includes introduction of a cleaning agent and a fluid carrier forming a washing fluid and the rinsing step includes introduction of a rinsing fluid; and

a system for recognition of the fluid level of the rinsing fluid contained in the dishwasher, the fluid level recognition system having at least one capacitive filling level sensor having at least two probes, forming two capacitor plate, each operatively coupled to a sensor surface and projecting into the washing container for operative contact with the rinsing fluid, thereby using the rinsing fluid as a dielectric having a dielectric constant that changes with the fill level of the rinsing fluid, wherein at a first fill level the probes and the rinsing fluid form a capacitor having a first capacitance value indicating a first fill level and causing the filling level sensor to sense the first fill level and at a second fill level the probes and the rinsing fluid form a capacitor having a second capacitance value indicating a second fill level and causing the filling level sensor to sense the second fill level.

App. Br., Claims Appendix.<sup>1</sup>

The Appellants seek review of the following rejections:<sup>2</sup>

(1) claims 11 and 12, provisionally, under 35 U.S.C. § 101 as claiming the same invention as claims 11 and 12 of copending Application 10/583,697;

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<sup>1</sup> Appeal Brief dated June 18, 2009.

<sup>2</sup> The rejection of claim 11 under 35 U.S.C. § 112, first paragraph, was withdrawn in the Examiner's Answer. Examiner's Answer dated August 11, 2009 ("Ans."), at 2, 3.

(2) claims 11-19 under 35 U.S.C. § 103(a) as unpatentable over the combination of Wennerberg<sup>3</sup> and Adamski<sup>4</sup>; and

(3) claim 20 under 35 U.S.C. § 103(a) as unpatentable over the combination of Wennerberg, Adamski, and Kuechler.<sup>5</sup>

## B. DISCUSSION

### 1. Rejection (1)

Claim 11 of the instant application recites a dishwasher comprising a system for recognizing the level of a *rinsing* fluid in the dishwasher. In contrast, the Appellants contend that claim 11 of Application 10/583,697 (“‘697 application”) recites a dishwasher comprising a system for recognizing the level of a *washing* fluid in the dishwasher. The Appellants contend that “an act of infringement of claim 11 of the present application would not necessarily involve an act of infringement of claim 11 of the ‘697 application.” App. Br. 7.

Moreover, claim 11 of the ‘697 application was subsequently amended to recite at least one sensor probe made of electrically conducting material which is provided inside the washing container of the dishwasher. Claim 11 of the instant application does not recite such a probe.

For these reasons, the § 101 rejection is reversed.<sup>6</sup>

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<sup>3</sup> US 3,539,153 issued November 10, 1970.

<sup>4</sup> US 4,982,606 issued January 8, 1991.

<sup>5</sup> US 6,294,906 B1 issued September 25, 2001.

<sup>6</sup> In the event of further prosecution, the Examiner should consider whether the claims on appeal are unpatentable over claims in the ‘697 application (now US 7,748,394, issued July 6, 2010) based on the judicially created doctrine of obviousness-type double patenting.

2. Rejection (2)

a. Claim 11

The Examiner finds that Wennerberg discloses a dishwasher comprising a system for recognizing the level of a rinsing fluid in the dishwasher. Ans. 4. In particular, Wennerberg discloses that a rising water level is detected in the washing container by three sensors, i.e., a low level sensor, a medium level sensor, and a high level sensor. Wennerberg, col. 2, ll. 61-64 and col. 5, ll. 16-19. Wennerberg discloses that the sensors may be of any well known type, such as electrode gap, capacitive, thermal, optical, etc., and are mounted in a manner to sense the water level in the washing container. Wennerberg, col. 2, ll. 64-67.

The Appellants argue that the fill level sensor recited in claim 11 uses a continuously variable capacitor as a sensor element, thereby providing continuously variable indications of fill level in the washing container. Appeal Br. 9. The Appellants argue that nothing in Wennerberg teaches using continuously variable capacitance to determine a continuously variable water level. App. Br. 10.

The Appellants' argument fails to consider the prior art as a whole. The Examiner relies on Adamski, not Wennerberg, as disclosing a capacitive filling level sensor as recited in claim 11. Indeed, there is no dispute on this record that the sensor disclosed in Adamski is capable of determining a continuously variable water level. *See* Ans. 7; Adamski, col. 4, l. 39-col. 5, l. 2. The Examiner contends that it would have been obvious to one of ordinary skill in the art to replace the three fill level sensors of Wennerberg with the single capacitive filling level sensor of Adamski to reduce the number of sensors while continuing to detect multiple levels of fluid in the washing container. Ans. 4-5. Moreover, the capacitive filling level sensor disclosed in Adamski is said to be an improvement over capacitance

sensors known in the art at the time of Adamski's invention. *See* Adamski, col. 1, l. 47-col. 2, l. 30.

Significantly, the Appellants do not explain, in any detail, why the Examiner's position is erroneous. Therefore, the § 103(a) rejection of claim 11 is affirmed.

b. Claim 12

The Appellants argue that neither Wennerberg nor Adamski "teaches or suggests that the filling sensor is in the form of a capacitor whose electrical capacity varies depending on the dielectric constant of the medium surrounding the filling level sensor" as recited in claim 12. App. Br. 10.

To the contrary, Adamski discloses that the capacitance between the plates of the capacitive filling level sensor is a direct function of the dielectric constant K of the material between the two plates, e.g., water or air. Adamski, col. 4, l. 39-col. 5, l. 2; *see also* Ans. 8. Therefore, the § 103(a) rejection of claim 12 is affirmed.

c. Claim 13

Claim 13 recites:

13. The dishwasher according to claim 11, wherein *at least two filling level sensors* are provided between which an electrical circuit *preferably* closes at low current as soon as the filling level sensors simultaneously come in contact with the rinsing fluid.

App. Br., Claims Appendix (emphasis added).

The Appellants argue that neither Wennerberg nor Adamski discloses electrical circuitry that closes when at least two filling level sensors simultaneously come in contact with the rinsing fluid. App. Br. 11-12. The Appellants also point

out that the Examiner has modified the system of Wennerberg by reducing the number of filling level sensors to one. However, claim 13 recites “at least two filling level sensors.” Reply Br. 2.<sup>7</sup>

We interpret claim 13 as reciting at least two filling level sensors and an electrical circuit provided between the at least two sensors. The electrical circuit *preferably* closes at low current when there is simultaneous contact between the at least two sensors and the rinsing fluid.<sup>8</sup>

The Examiner has failed to explain why it would have been obvious to one of ordinary skill in the art to increase the number of filling level sensors in the modified Wennerberg system from one to at least two as recited in claim 13. For this reason, the § 103(a) rejection of claim 13 is reversed.

d. Claim 14

The Appellants argue that neither Wennerberg nor Adamski teaches or suggests a filling level recognition system comprising “electronic means which preferably qualitatively and quantitatively detect the electrical capacitance or the electrical conductivity of the filling level sensor and its variation” as recited in claim 14. App. Br. 12.

According to the Appellants’ specification:

By *quantitatively* detecting the variation in the electrical capacitance or the electrical conductivity of the filling level sensor, it is not only

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<sup>7</sup> Reply Brief dated August 24, 2009.

<sup>8</sup> In the event of further prosecution, the Examiner should consider whether the use of the word “preferably” in claim 13 renders the claim indefinite under 35 U.S.C. § 112, second paragraph. That is, the Examiner should consider whether the use of the word “preferably” leads to confusion over the intended scope of the claim.

determined whether a certain fluid level is reached, exceeded or fallen below but preferably also the exact height of the fluid level. . . .

[A] *qualitative* determination of the liquid level by means of a single filling level sensor is favoured if the area of the filling level sensor which comes in contact with the rinsing liquid has a[n] extended, substantially rectangular shape.

Spec., paras. [013]-[014] (emphasis added).

The Examiner finds that Adamski discloses an electronic means as recited in claim 14. Ans. 8-9. Indeed, Adamski discloses both quantitatively and qualitatively detecting variations in the electrical capacitance of the filling level sensor. *See, e.g.*, Adamski, col. 6, l. 36-col. 7, l. 36 (signal generated which varies proportionally to changes in the filling level sensor capacitance); Adamski, col. 4, l. 39-col. 5, l. 2 and Adamski Fig. 2 (filling level sensor which comes in contact with the rinsing liquid has an extended, substantially rectangular shape).

Therefore, the § 103(a) rejection of claim 14 is affirmed.<sup>9</sup>

e. Claim 15

Claim 15 recites:

15. The dishwasher according to claim 11, wherein the system for recognition of filling level comprises a number of capacitive filling level sensors which are *preferably* arranged at the height of specific fluid levels on the washing container.

App. Br., Claims Appendix (emphasis added).

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<sup>9</sup> In the event of further prosecution, the Examiner should consider whether the use of the word “preferably” in claim 14 renders the claim indefinite under 35 U.S.C. § 112, second paragraph. In particular, the Examiner should consider whether the use of the word “preferably” leads to confusion over the function of the claimed “electronic means.”



As in the case of claim 13, the Appellants argue that the Examiner's proposed modification of Wennerberg reduces the number of capacitive filling sensors to one. However, claim 15 recites "a number of capacitive filling level sensors," i.e., more than one. Reply Br. 2-3.

As explained above, the Examiner has failed to explain why it would have been obvious to one of ordinary skill in the art to increase the number of filling level sensors in the modified Wennerberg system from one to at least two. For this reason, the § 103(a) rejection of claim 15 is reversed.<sup>10</sup>

f. Claim 16

Claim 16 recites:

16. The dishwasher according to claim 11, wherein at least one filling level sensor is arranged in the base assembly in such a manner that rinsing fluid that has flowed from the washing container into the base assembly can be detected.

App. Br., Claims Appendix.

The Examiner finds that Adamski clearly shows that the filling level sensor **48** extends to the base of the washing machine. Adamski Fig. 1. The Examiner concludes that "it is well within the ordinary skill level of one of ordinary skill to have placed the sensor at the base of the dishwasher to detect fluid at the base of the dishwasher." Ans. 9.

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<sup>10</sup> In the event of further prosecution, the Examiner should consider whether the use of the word "preferably" in claim 15 renders the claim indefinite under 35 U.S.C. § 112, second paragraph. That is, the Examiner should consider whether the use of the word "preferably" leads to confusion over the intended scope of the claim.

The Appellants argue that “there is no clear showing that the sensor extends to the base of the washing machine” in Adamski Figure 1. Reply Br. 3. We disagree. Adamski Figure 1 clearly shows that the lower end of the filling level sensor **48** is positioned outside of the basket **14** and extends along the wall of the tub **12** into the lower end of the tub to a point which is lower than the basket **14**. Thus, it is reasonable to find that the filling level sensor is arranged in the base assembly of the washing machine.<sup>11</sup>

The § 103(a) rejection of claim 16 is affirmed.

g. Claim 17

The Appellants argue that neither Wennerberg nor Adamski “teaches or suggests that the system for recognition of filling level comprises a filling level sensor by which means at least two different fluid levels can be determined” as recited in claim 17. App. Br. 14.

To the contrary, Adamski discloses that the capacitive filling level sensor determines multiple fluid levels in the tub **12**. *See, e.g.*, Adamski, col. 4, l. 60-col. 5, l. 2; Ans. 9. Therefore, the § 103(a) rejection of claim 17 is affirmed.

h. Claim 18

The Appellants argue that neither Wennerberg nor Adamski “teaches or suggests that the filling level sensor has an extended, preferably substantially rectangular shape” as recited in claim 18. App. Br. 14.

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<sup>11</sup> Neither claim 11 nor claim 16 provide antecedent basis for “the base assembly” recited in claim 16. In the event of further prosecution, the Examiner should consider whether this lack of antecedent basis renders claim 16 indefinite under 35 U.S.C. § 112, second paragraph.

To the contrary, Adamski clearly shows that the filling level sensor has an extended, substantially rectangular shape. *See* Adamski Fig. 2; Ans. 10.

Therefore, the § 103(a) rejection of claim 18 is affirmed.<sup>12</sup>

i. Claim 19

Claim 19 recites:

19. The dishwasher according to claim 11, wherein the filling level sensor is located inside the washing container *preferably* at a position protected from spray water.

App. Br., Claims Appendix (emphasis added).

The Appellants argue that Wennerberg teaches that as the water level rises in the dishwasher, output signals are sequentially produced by the sensors. However, the Appellants argue that with a spray device, water would typically hit the sensors at rapid, random intervals such that no sequential operation could be performed. Therefore, according to the Appellants, there is no reason or teaching to protect the sensors of Wennerberg from spray water. App. Br. 15.

The Appellants' argument is not understood. The Appellants recognize that the sensors of Wennerberg are intended to operate in a sequential manner to monitor the rising level of rinse water. App. Br. 15. The filling level sensor of Adamski also monitors the rising level of rinse water. In Adamski, the sensor **48** is disposed between the tub **12** and the basket **14** and thus, is protected from any water spray during operation. Adamski Fig. 1. One of ordinary skill in the art

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<sup>12</sup> In the event of further prosecution, the Examiner should consider whether the use of the word "preferably" in claim 18 renders the claim indefinite under 35 U.S.C. § 112, second paragraph. That is, the Examiner should consider whether the use of the word "preferably" leads to confusion over the intended scope of the claim.

would have understood that it would be desirable to protect the sensor of Adamski in the dishwasher of Wennerberg in a similar manner to insure that the sensor operates as intended. Therefore, the preponderance of the evidence weighs most heavily in favor of the obviousness of the subject matter recited in claim 19 within the meaning of § 103(a).

The § 103(a) rejection of claim 19 is affirmed.<sup>13</sup>

j. Claim 20

The Appellants argue that neither Wennerberg nor Adamski “teaches or suggests that a fixing side of the filling level sensor is provided with a self-adhesive layer” as recited in claim 20 and argues that Kuechler does not cure the deficiencies of Wennerberg and Adamski. App. Br. 16.

The Examiner finds that Adamski teaches mounting the filling level sensor with fasteners and Kuechler teaches mounting a sensor in a secure fashion with an adhesive. Ans. 6; *see also* Ans. 10. The Examiner explains that:

[O]ne skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention, meaning that an adhesive taught by [Kuechler] can be used on the capacitance level sensor in [the Wennerberg] apparatus in view of [Adamski] to have yield[ed] the predictable result of securing the sensor [to] the support.

Ans. 6.

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<sup>13</sup> In the event of further prosecution, the Examiner should consider whether the use of the word “preferably” in claim 19 renders the claim indefinite under 35 U.S.C. § 112, second paragraph. That is, the Examiner should consider whether the use of the word “preferably” leads to confusion over the intended scope of the claim.

The Appellants have failed to direct us to any error in the Examiner's position. Therefore, the § 103(a) rejection of claim 20 is affirmed.

C. DECISION

The rejection of claims 11 and 12 under 35 U.S.C. § 101 as claiming the same invention as claims 11 and 12 of copending Application 10/583,697 is reversed.

The rejection of claims 11, 12, 14, and 16-19 under 35 U.S.C. § 103(a) as unpatentable over the combination of Wennerberg and Adamski is affirmed.

The rejection of claims 13 and 15 under 35 U.S.C. § 103(a) as unpatentable over the combination of Wennerberg and Adamski is reversed.

The rejection of claim 20 under 35 U.S.C. § 103(a) as unpatentable over the combination of Wennerberg, Adamski, and Kuechler is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

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